

REMARKS

In response to the Office Action mailed November 2, 2004, Applicants amend their application and request reconsideration. No claims are added or cancelled so that claims 1-5 remain pending.

The Examiner requested the addition of a prior art label to Figure 7 and a replacement drawing sheet including that amendment is attached.

Minor errors in the claims are corrected without substantive amendment of the claims. Claim 1 is amended to point out that the operating rod does not extend completely through the gas tank but extends into the gas tank. The final two paragraphs of claim 1 are combined because there is only a single insulating rod referred to in the claimed structure. Claim 4 is amended merely to restore a limitation of the original claim.

Claims 1-5 were rejected as indefinite. The comment with respect to claim 1 in this rejection is responded to by the clarifying amendment described above. The Examiner stated that it is unclear what gas is referred to in claim 5 by $c\text{-C}_4\text{F}_8$. As known to those of skill in the art, "c" means that the compound is cyclic with the four carbon atoms bonded in a ring and two fluorine atoms bonded to each of the carbon atoms. There is no lack of clarity in the original term.

Claims 1-5 were rejected as unpatentable over the prior art described in the patent application with respect to the switchgear of Figure 7. This rejection is respectfully traversed.

Applicants acknowledge that there are similarities between the prior art vacuum valve structures shown in Figure 7 of the patent application and the subject matter claimed. However, as acknowledged by the Examiner, there is no identity of subject matter. There are at least three differences between the subject matter of claim 1 and the vacuum valve shown in Figure 7 of the patent application.

First, the contact adjusting spring in the invention is disposed on a second side of the moving current-carrying shaft. In the structure shown in Figure 7, the "insulating rod" 11 is disposed on the second end of the current-carrying shaft 9. Second, in the invention, the insulating rod is mounted on the operating rod that is moved by the operation mechanism part to open and close the contacts of the vacuum valve. In the structure shown in Figure 7 of the patent application, the insulating rod 11 is not mounted on the operating rod 17, but on the moving current-carrying shaft 9. Third, in the invention, the insulating rod electrically insulates the operating rod from the contact pressure adjusting spring. In the structure shown in Figure 7, the insulating rod 11 insulates the moving current-carrying shaft 9 from the contact pressure adjusting spring 19. Thus, in the invention, the contact pressure adjusting spring is always at the

potential of the moving current-carrying shaft whereas in the structure shown in Figure 7, the spring 19 is always at ground potential or whatever other potential the operating rod has.

According to the Office Action, it would have been obvious to have mounted the parts of claim 1 in the arrangement described in that claim based upon the structure shown in Figure 7 of the patent application. However, the Examiner did not explain why it would have been obvious to achieve the mounting arrangement described in claim 1 nor what the motivation would be for modifying the structure shown in Figure 7 to produce an embodiment of the invention, for example, as shown in Figure 1 of the patent application. According to the Examiner, this difference is a mere rearrangement of the same parts that does not represent a patentable invention. However, important advantages are achieved in the invention that are not disclosed nor suggested in the prior art, demonstrating that the invention is not a mere rearrangement of the parts of the switchgear shown in Figure 7 without any effect.

Advantages of the invention are described at pages 10 and 11 of the patent application. For example, it is possible to make the vacuum valve more compact in the structure according to the invention. This change in size has an important effect. As described in the patent application with regard to the structure of Figure 7, because of the limited support provided for the structure supporting the contacts of the vacuum valve, there can be vibrations, i.e., oscillation, of the moving current-carrying shaft transverse to the axis of that shaft during switching. In other words, the contacts 4 and 5 of the vacuum valve might not align every time the switch is closed. In a vacuum valve, according to the structure claimed, i.e., that is shortened along the axial direction of the moving current-carrying shaft, the magnitude of the oscillations transverse to that axial direction is reduced. Thus, the alignment of the contacts 4 and 5 upon closing of the vacuum valve is improved with the result that contact resistance is reduced and the power dissipated in the vacuum valve is likewise reduced. It follows that the temperature rise of the vacuum valve is also reduced. While one may consider that the change in contact resistance is not large due to misalignment of the contacts, at the high magnitude currents flowing through the contacts of the vacuum valve, every reduction in contact resistance results in a significant power savings and temperature reduction of the vacuum valve.

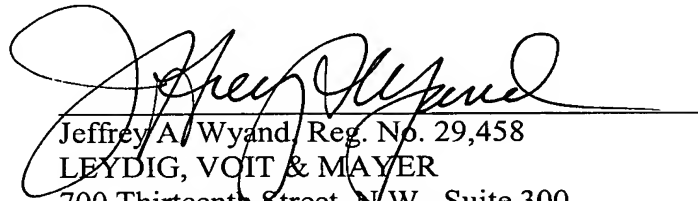
Moreover, the reduced vibration of the current-carrying shaft means that the frictional force applied to the guide 15 in the embodiment of Figure 1 is reduced. See page 11, lines 10-17 of the patent application. Therefore, the force that must be applied by the operation mechanism, element 18 in the embodiment of Figure 1, can be reduced simplifying that structure, leading to size and cost reduction.

In re Appln. of SATO et al.
Application No. 10/753,080

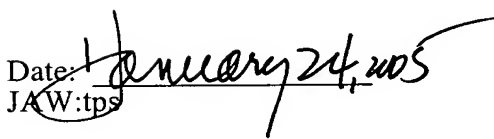
If it were demonstrated that it was known in the prior art that these advantages would be achieved by changing the design of the vacuum valve shown in Figure 7, then motivation would be supplied for making the modification and *prima facie* obviousness might be established. However, the Examiner has not demonstrated any such motivation in the prior art so that no claim now pending can be obvious based upon the structure shown in Figure 7 of the patent application. Since a threshold requirement for demonstrating obviousness has not been met, the rejection is erroneous and should be withdrawn.

Reconsideration and allowance of all of claims 1-5 is, therefore, earnestly solicited.

Respectfully submitted,



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Date: 
JAW:tps

Amendment or ROA - Regular (Revised 10/21/04)

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AMENDMENTS TO THE DRAWINGS

The attached sheet includes changes to Figure 7 to which a prior art label has been added.

Attachment: Replacement Sheet(s)